

Chapter 10¹

MULTI-ATTRIBUTE DECISION TREES AND DECISION RULES

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Abstract: Among the numerous learning tasks that fall within the field of knowledge discovery in databases, classification may be the most common. Furthermore, top-down induction of decision trees is one of the most popular techniques for inducing such classification models. Most of the research in decision tree induction has focused on single attribute trees, but in this chapter we review multi-attribute decision trees induction and discuss how such methods can improve both the accuracy and simplicity of the decision trees. As an example of this approach we consider the recently proposed second order decision tree induction (SODI) algorithm, which uses conjunctive and disjunctive combinations of two attributes for improved decision tree induction in nominal databases. We show via numerical examples that in many cases this generates more accurate classification models and easier to interpret decision trees and rules.

Key Words: Decision Trees, Decision Rules, Multi-Attribute Splits.

¹ Triantaphyllou, E. and G. Felici (Eds.), **Data Mining and Knowledge Discovery Approaches Based on Rule Induction Techniques**, Massive Computing Series, Springer, Heidelberg, Germany, pp. 327-358, 2006.

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